IN THE CLAIMS:

1-5. (Cancelled)

6. (Currently amended) ~~The~~ An array antenna system ~~according to Claim 1,~~ having an electrically large array antenna, comprising:

a first antenna subarray;

a second antenna subarray;

a combination line network having an input for receiving an antenna power signal, and a first output connected to emit a first output signal to the first antenna subarray, and a second output connected to emit a second output signal to the second antenna subarray;

a phase shifting device for generating a phase displacement between the first and second output signals before they are fed to the antenna subarrays;

apparatus for compensating the phase displacement in the beam path of the antenna radiation emitted by the first and second antenna subarrays; and

wherein the antenna subarrays are mutually displaced with respect to a main beaming direction of the antenna.

7. (Original) The array antenna system according to Claim 6, wherein the antenna subarrays are arranged perpendicular to the main beaming direction of the antenna, and are mutually displaced by a quarter of a wavelength.

8. (Original) The array antenna system according to Claim 6, wherein:

the antenna subarrays are arranged diagonally to the main beaming direction of the antenna; and

the centers of the antenna subarrays are mutually displaced by a quarter of the wavelength with respect to the main beaming direction.

9. (Original) The array antenna system according to Claim 8, wherein the antenna subarrays are arranged in a common plane.

10-12. (Canceled)

13. (Currently amended) ~~The~~ An array antenna system ~~according to Claim 10,~~ having an electrically large array antenna, comprising:

a first antenna subarray;

a second antenna subarray;

a combination line network having an input for receiving an antenna power signal, and a first output connected to emit a first output signal to the first antenna subarray, and a second output connected to emit a second output signal to the second antenna subarray;

a phase shifting device for generating a phase displacement between the first and second output signals before they are fed to the antenna subarrays; and

apparatus for compensating the phase displacement in the beam path of the antenna radiation emitted by the first and second antenna subarrays;

wherein the antenna subarrays are covered by dielectric layers of different dielectric constants, which compensate the phase displacement of the radiation emitted by the antenna subarrays; and

wherein a first dielectric layer is air, and a second dielectric layer is a layered medium with a dielectric constant that is larger than the dielectric constant of air.

14. (Currently amended) ~~The~~ An array antenna system ~~according to Claim 1,~~ having an electrically large array antenna, comprising:

a first antenna subarray;

a second antenna subarray;

a combination line network having an input for receiving an antenna power signal, and a first output connected to emit a first output signal to the first antenna subarray, and a second output connected to emit a second output signal to the second antenna subarray;

a phase shifting device for generating a phase displacement between the first and second output signals before they are fed to the antenna subarrays; and

apparatus for compensating the phase displacement in the beam path of the antenna radiation emitted by the first and second antenna subarrays; and

wherein waveguide paths with different cross-sectional dimensions are arranged on the antenna subarrays, which cross-sectional dimensions compensate the phase displacement of the radiation emitted by the first and second antenna subarrays.

15. (Original) The array antenna system according to Claim 14, wherein the waveguides have a difference (d) in length which causes a relative displacement of the radiation emitted by the antenna subarrays by one quarter of a wavelength in the sense of a compensation of the 90° phase displacement generated by the phase shifting device.

16. (Original) The array antenna system according to Claim 14, wherein the antenna subarrays are arranged in a common plane.

17. (Original) The array antenna system according to Claim 14, wherein at outputs of the waveguide paths, transition paths are provided with a transition from a narrow cross-section to a wide cross-section.

18-20. (Cancelled)

21. (Currently amended) ~~The~~ An array antenna system ~~according to Claim 1,~~ having an electrically large array antenna, comprising:

a first antenna subarray;

a second antenna subarray;

a combination line network having an input for receiving an antenna power signal, and a first output connected to emit a first output signal to the first antenna subarray, and a second output connected to emit a second output signal to the second antenna subarray;

a phase shifting device for generating a phase displacement between the first and second output signals before they are fed to the antenna subarrays; and

apparatus for compensating the phase displacement in the beam path of the antenna radiation emitted by the first and second antenna subarrays; and

wherein the combination line network contains a 4-gate power splitter.

22. (Original) The array antenna system according to Claim 21, wherein the 4-gate power splitter comprise one of a Wilkinson splitter, a 3-dB directional coupler and an E-H waveguide double-T branching.

23. (Original) A method of operating an array antenna system having an electrically large array antenna that includes first and second antenna subarrays and a combination line network that has first and second outputs connected to emit signals to the first and second antenna subarrays respectively, said method comprising:

introducing a phase shift into the signal emitted from said combination line network to one of said first and second antenna subarrays, creating a phase displacement between the signals input to the first and second antenna subarrays;

compensating the phase displacement by modifying relative physical characteristics of said first and second antenna subarrays.

24. (Original) The method according to Claim 23, wherein said phase displacement is approximately 90°.

25. (Original) The method according to Claim 24, wherein said compensating step comprises providing a mutual displacement of the first and second antenna subarrays relative to a beaming direction of the antenna.

26. (Original) The array antenna system according to Claim 25, wherein the antenna subarrays are arranged perpendicular to the main beaming direction of the antenna, and are mutually displaced by a quarter of a wavelength.

27. (Original) The array antenna system according to Claim 25, wherein:

the antenna subarrays are arranged diagonally to the main beaming direction of the antenna; and

the centers of the antenna subarrays are mutually displaced by a quarter of the wavelength with respect to the main beaming direction.

28. (Original) The method according to Claim 24, wherein said compensating step comprises covering said first and second antenna subarrays with dielectric layers having different dielectric constants.

29. (Original) The array antenna system according to Claim 28, wherein the dielectric layers have a layer thickness (d) that causes a displacement between the radiation emitted by the antenna subarrays by a

quarter of a wavelength in the sense of a compensation of the 90° phase displacement generated by the phase shifting device.